

From *National's* High-Speed Printer flow
automatic reports for

**PROFITABLE
Business Decisions**



and many other special and
general purpose applications.



National's **ELECTRONIC**
to a new concept in

National's electronic
data processing system
is designed specifically
FOR BUSINESS



For years National studied electronic accounting requirements by contacting financial and methods executives in industry . . . in government . . . in utilities . . . in financial institutions . . . in transportation . . . and in retail-wholesale merchandising. This study revealed the desires of various management levels:

From an Industrial President:

"Decisions would be easier if control reports could be placed on my desk every morning. *Economy* of operation, combined with *current* operating information, are important considerations in an electronic accounting system."

From a Methods Department:

"With our constant plant expansion, *flexibility* and *expandability* are essential accounting requirements in an electronic business system.

"We also desire and require *simplified processing instructions*—we're not mathematicians."

From a Comptroller's Office:

We consider three factors vital before business will enthusiastically accept electronic account-

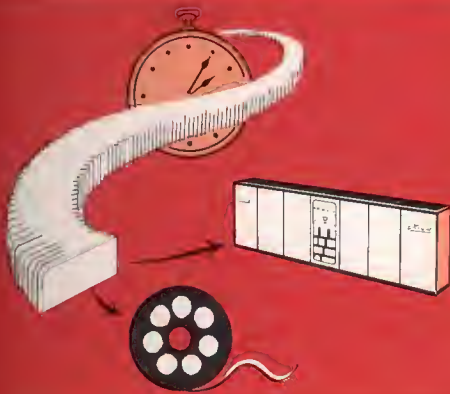
ing: (1) Business has many records to process. Therefore, *high-speed input* is imperative. (2) Quick access to records and *high-speed printing* of many kinds of information are also basic requirements. (3) We must be assured that the processing of all records is 100% accurate.

This is the type of information that provided the basis for establishing the equipment specifications of National's Electronic Accounting System. National's creative engineers solved the problem of high-speed data processing, required by business . . . fulfilled other specifications desired in business . . . and created the first electronic accounting system designed for general business of all sizes.

The purpose of this booklet is to highlight some of the components of the National Electronic Data Processing System . . . a system offering all the features required for a successful installation of an Electronic Accounting Department—TODAY AND TOMORROW.

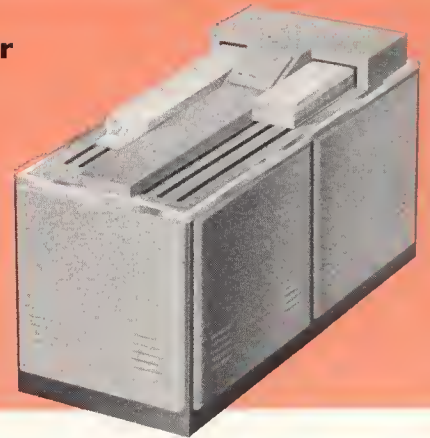
ACCOUNTING SYSTEM leads the way
evaluating data processing efficiency.

National's high-speed data input units

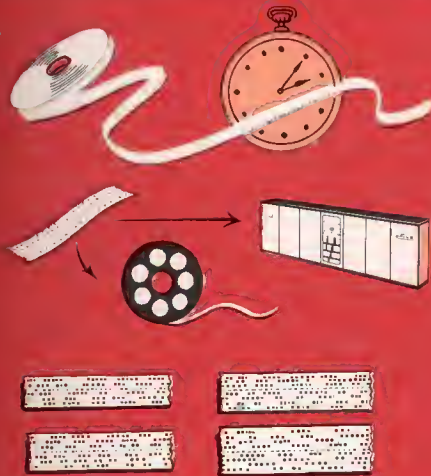


High-Speed Card Reader

- 1,000 cards per minute fed directly into processor
- or
- 1,000 cards per minute converted to magnetic tape independent of the processor



National's reading speed of 1,000 punched cards a minute is designed for modern business accounting. This enables data to be transmitted directly to the processor for immediate preparation of management reports. Voluminous data can also be read from cards, and written on magnetic tape independent of the processor.



High-Speed Paper Tape Reader

- 1,300 characters per second fed directly into processor
- or
- 1,300 characters per second converted to magnetic tape independent of the processor
- Universal Reader—recognizes data on any size tape from 5 through 8 channels

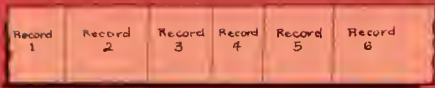


National's Universal Tape Reader reads and checks photo-electrically any channel tape from 5 through 8. High-speed reading at a rate of 1,300 characters per second enables data to be immediately processed. National can read 1,500 records, 50 characters long, in just one minute. Like punched cards, punched paper tape data can be written directly on magnetic tape.

Advantages to You -

- Higher input speeds enable management reports to be processed and printed immediately.
- Wire transmitted data *in its initial form* can be read directly into the system.
- The ability to read punched cards . . . any channel tape . . . with all data completely checked for accuracy, provide the input flexibility and control required for electronic business accounting.

National's magnetic tape file system



Magnetic tape handler

- Writes and reads 20,000 characters per second.
- Maximum utilization of magnetic tape:

*No wasted tape between records
Variable record length*

- All input data and all output records to and from magnetic tape can be independent of the processor; or pass through the processor.
- Variable number of tape units — 1 to 64.



Every reel of magnetic tape contains 2,400 feet of alphabetic, numeric, or alpha-numeric information stored at 200 characters per inch. Since National's tape file provides for variable record length with no wasted space between records, over five and one-half million characters can be stored on one reel.

At the time the data is written, it is instantly checked for accuracy. Reliability is assured!

Business requires efficiency! National's new method of posting to magnetic tape is designed specifically for business. While retaining all the advantages of inserting, deleting, changing, and opening additional records while updating the file tape, National has the unique capability of seeking the next active record independent of the processor.

Business requires speed! National writes on and reads from the tape file at a speed of 20,000 characters a second.

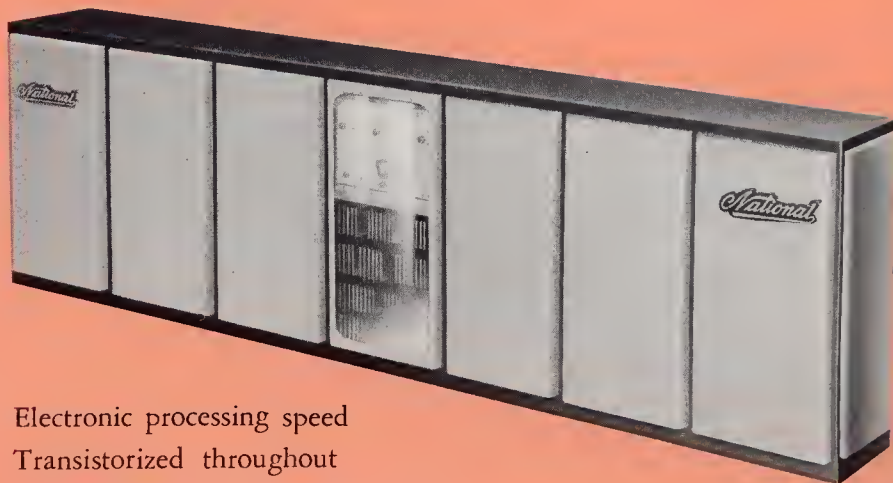
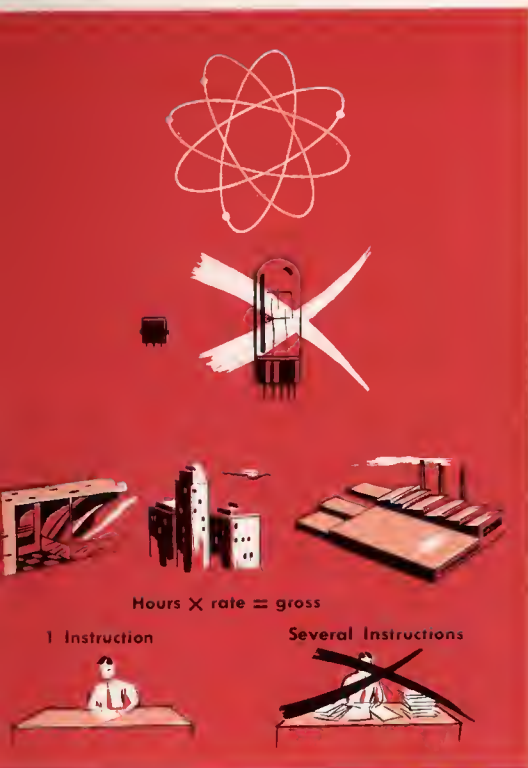
Business requires flexibility! National's filing system provides the ultimate in flexibility by being able to operate with any unit in the system. Data can be filed on magnetic tape directly from the processor . . . directly from the card reader . . . directly from the paper tape reader. Information from the tape file can be read and transmitted directly to the processor . . . directly to the printer . . . directly to the paper tape punch . . . directly to the card punch.

All data transmissions are automatically checked for accounting reliability.

Advantages to You —

- The ability to store records of variable length provides the efficiency required by business.
- Complete use of space on tape with no wasted area saves both processing time and magnetic tape files.
- The ability to transmit data directly from input units through the magnetic tape file to output units—or through the processor—provides the flexibility required for business accounting.
- With the ability to search records independent of the processor, several tape files can be updated simultaneously—reducing over-all processing time.
- National's design enables existing identification codes to be retained.

National's central processing unit



- Electronic processing speed
- Transistorized throughout
- Core memory for any size business—10,000, 20,000 or 40,000 positions
- Simplified programming—a business command structure.

The National Central Processor is designed with a built-in business command structure to simplify programming. For example, merging, summarizing, table-lookup, editing, and many other functions are common to processing business data. The Central Processor handles each of these operations with a single, special command. These simplified business commands save programming time and costs, min-

imizing this constantly increasing expense.

The internal program tells the processor what arithmetic and logic functions are to be performed enabling your business data to be processed automatically.

For business economy, the central processor is packaged with three different magnetic core memory sizes: 10,000, 20,000, or 40,000 memory positions.

Advantages to You -

- Business command structure simplifies programming and saves hours of costly time.
- Electronic processing speed assures management reports are produced on schedule.
- Transistorized construction throughout the system reduces space . . . reduces power costs . . . reduces heat . . . reduces air conditioning costs . . . and provides greater reliability.
- Variable core memory construction provides maximum economy for individual business requirements.
- Time-sharing feature enables file system to seek next active account independent of the processor.
- Electronic speed, large capacity files, and variable core memory processor provide a custom-designed system for your problems.

National's output units



High-Speed Printer

- Printing Speed—600 lines per minute.
- Line-skipping speed—4200 lines per minute.
- Printing directly from processor; or independent of the processor.



The high-speed printer will print on any size form from 4 inches to 22 inches wide at a speed of 600 lines per minute; 120 characters per line. Since the production of some records, such as checks and invoices, requires the skipping of many lines, National's printer has the ability to skip 7 times as fast as it prints; or 4200 lines a minute.

High-speed paper tape punch

- 60 characters per second
- Data available for immediate wire transmission.

The punched paper output is at a rate of 3600 characters a minute. The paper punch will select one of two codes determined by the console switch. One code will conform to the typewriter code; the other may be any channel code desired—5 through 8. The paper punch is designed for exception reporting and data transmissions by teletype.



Card Punch

- Punch card output is provided by a parallel type punch with full provision for checking. Punching is at a rate of 100 eighty-column cards per minute.

Advantages to You -

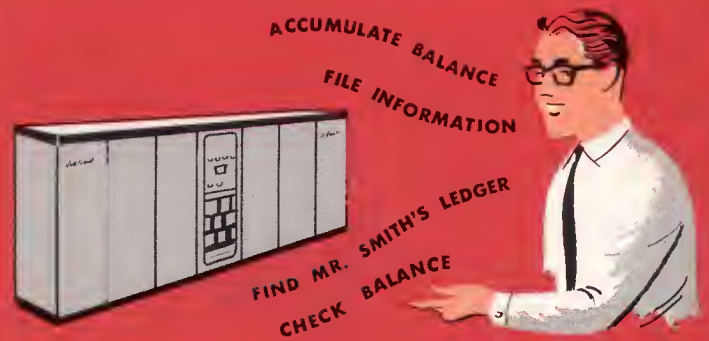
- The high-speed printing output is geared for business records and reports.
- National provides flexibility of system output. Printed or punched information can be produced from either a magnetic tape or the central processor.
- Data is available for immediate wire transmissions.

National's advanced features are

DESIGNED WITH

Business Command Structure to Enable Programmer to "Talk" to Processor in a Universal Accounting Language.

Programming costs are a large portion of any business investment to a data processing system. To reduce these costs National's Electronic Data Processor is designed with Autocoding Techniques, which enable the programmer to write processing instructions in a simplified language.

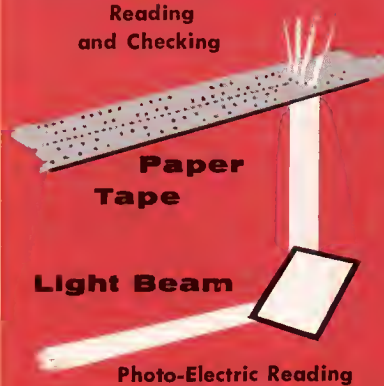


Complete Checking Throughout System to Assure 100% Accuracy of All Data Transmissions.

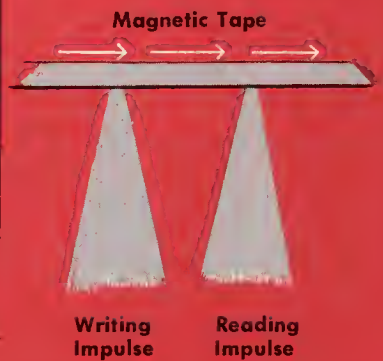
Photo-electric reading enables punched cards and paper tape to be read at unprecedented input speeds. These speeds are possible because beams of light are used to read and check the punched input data.

National's advanced design also provides an instant write-read check of all information at the time data is written on magnetic tape. With high-speed business processing, it is important that all data be checked at time of transmission.

High-Speed Photo-Electric Reading and Checking



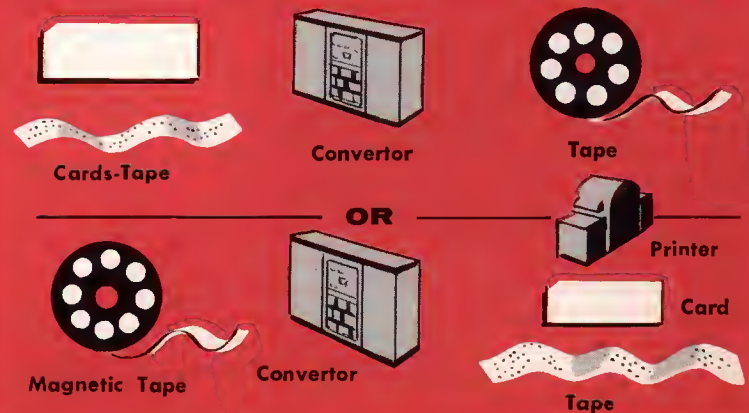
WRITE - READ CHECK



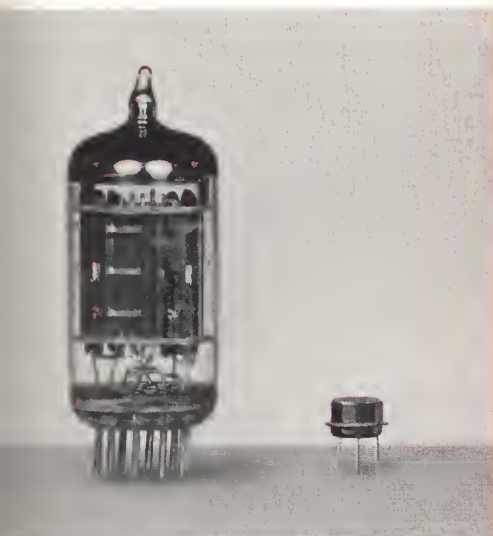
Universal Converter to Permit All Input-Output Functions to be Time-Shared with Processor.

While the central processor is handling data independent of input-output units, the converter will read punched information and write it on magnetic tape—or send records and reports to the output equipment from magnetic tape. This time-sharing ability of the units in National's System provides greater efficiency for business accounting.

INPUT-OUTPUT FUNCTIONS TIME-SHARED



THE USER IN MIND

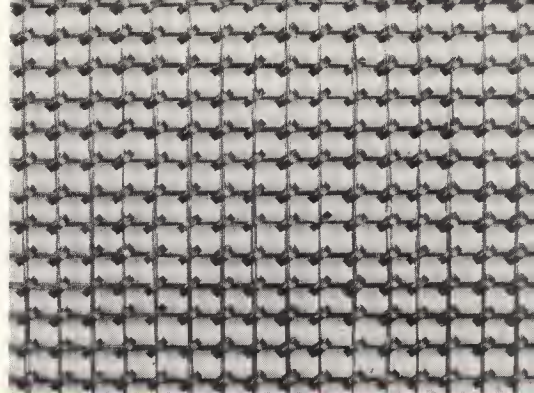


Transistors to Reduce Space, Heat, and Power Costs.

National's System is engineered with the latest innovations in electronic construction and design. The use of transistors instead of tubes means: reduced power costs, reduced heat, and reduced space.

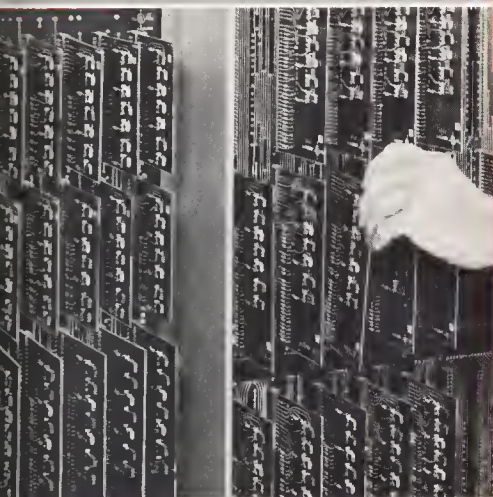
The reliability of transistors permit "printed" assemblies with all components lasting the life of the circuit.

National is designed for dependability—an essential requirement for electronic accounting.



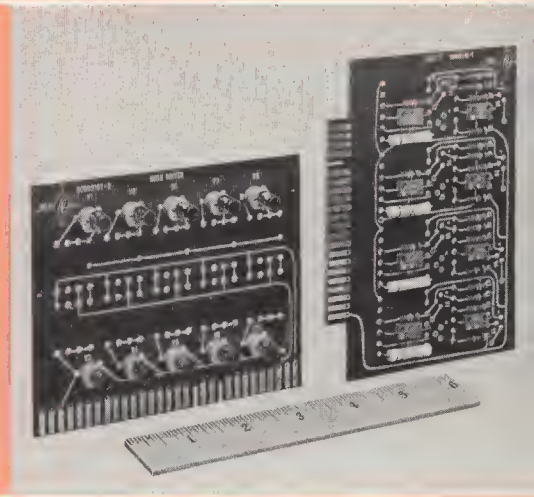
Magnetic Cores to Assure Fast, Efficient Memory.

Memory cores, so tiny a thimble will hold approximately 1,000, form the memory nucleus of the most advanced electronic computers. As a result of years of research, National developed a new memory core that offers great stability for varying electrical current and other disturbing influences. This new memory core is used in the National Central Processor, assuring the user greater efficiency in processing business data.



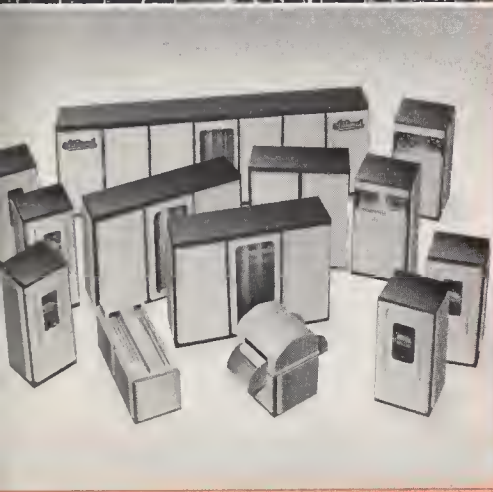
Plug-in Circuits to Provide Ease of Maintenance.

Plug-In circuits, used throughout the system, can be instantly and conveniently replaced. The Central Control Panel, through National's built-in checking and testing features, will indicate and isolate the area of a malfunctioning circuit. A trained serviceman will then be able to locate the trouble and replace the circuit with a new plug-in assembly.



Individual Packaged Components to Meet Your Specific Accounting Requirements.

Whatever units you require—today or tomorrow—are available in a National Electronic Accounting System: High-Speed Card Reader, High-Speed Paper Tape Reader, Magnetic Tape Handler, Magnetic Tape Controller, Central Processor, Control Console, High-Speed Printer, High-Speed Paper Tape Punch, Card Punch, Universal Converter, Variable Number of Magnetic Tape Files, and Printer Converter.



"Printed" Electric Circuit to Guarantee Uniform and Reliable Assemblies.

Today's printed electric circuits replace a maze of complicated wiring. This modern method of wiring provides greater reliability throughout the entire system. Neat, compact, professional wiring circuits require less space.

The manufacturing human error is eliminated because all printed electric circuits are correctly wired and soldered—reducing trouble-shooting time for the servicemen.

A Flexible System

National's flexibility enables business to meet changing conditions—to grow and expand as business requires. With variable magnetic core memories from 10,000, 20,000, or 40,000 positions; and magnetic tape files from 1 to 64 units; National can provide electronic accounting for businesses large or small. The added ability to handle data through the processor, or independent of the processor, provides the ultimate in flexibility.

A Balanced System

The processing of business data requires a high-speed system capable of handling a large volume of routine paperwork. Every unit is designed to provide business with a balanced system: High-Speed Input, High-Speed Filing System, High-Speed Electronic Processing, and High-Speed Output.

An Integrated System

Punched tape and punched cards can be produced from National Adding Machines, National Accounting Machines, National Bookkeeping Machines, National Media Readers, and National SALES-TRONIC★ Registers. This input data is made available as an automatic by-product of recording the original entry.

Only National provides a complete line of "original entry" equipment designed for an integrated Electronic Accounting System.

★ Trademark

A Reliable System

To assure reliability, all data moved within the system is checked from the initial input to the final report: (1) Photo-electric checking of all raw data with no loss in reading time. (2) Instant parity check of magnetic tape transmissions at both time of writing and time of reading data. (3) Parity check of all data transmissions handled within the processor. (4) Echo checking of the printing of all records and reports. (5) Self-checking of punched paper tape and punched card output.

An Economical System

National provides economy of investment! The high-speed units provide large-capacity operations at a medium price.

National provides economy of time! The ability to time-share data through the processor, or independent of the processor, enables all units to operate at maximum efficiency.

National provides economy of size. By installing a minimum system, National's design of individual packaged components provides economical expansion whenever desired.

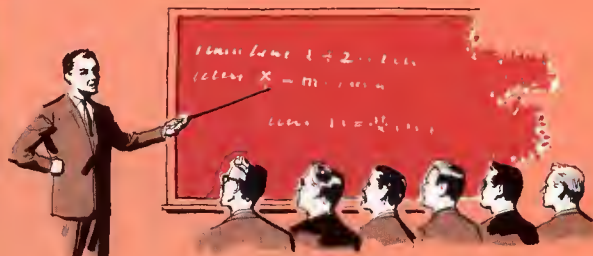
In this new era of electronic business accounting

National will assist you every step of the way



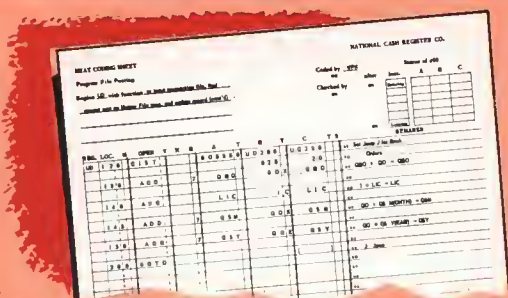
INVESTIGATE-

National Representatives will help you determine if Electronic Business Accounting will be feasible and profitable for you.



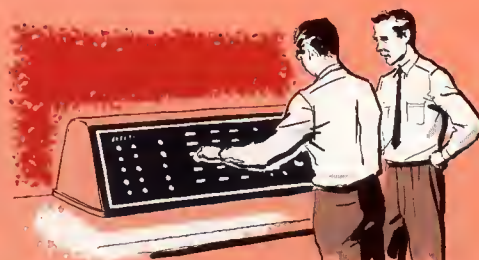
TRAIN-

National will train your selected personnel on how the records and business reports desired can be prepared electronically.



PROGRAM-

With National's training and assistance, your personnel will be able to tell the system how to provide the desired information through electronic machine logic and automatic coding techniques.



TEST-

Before your system is installed, your key programs will be tested at National's Programming Center to provide a satisfactory conversion to electronic accounting.



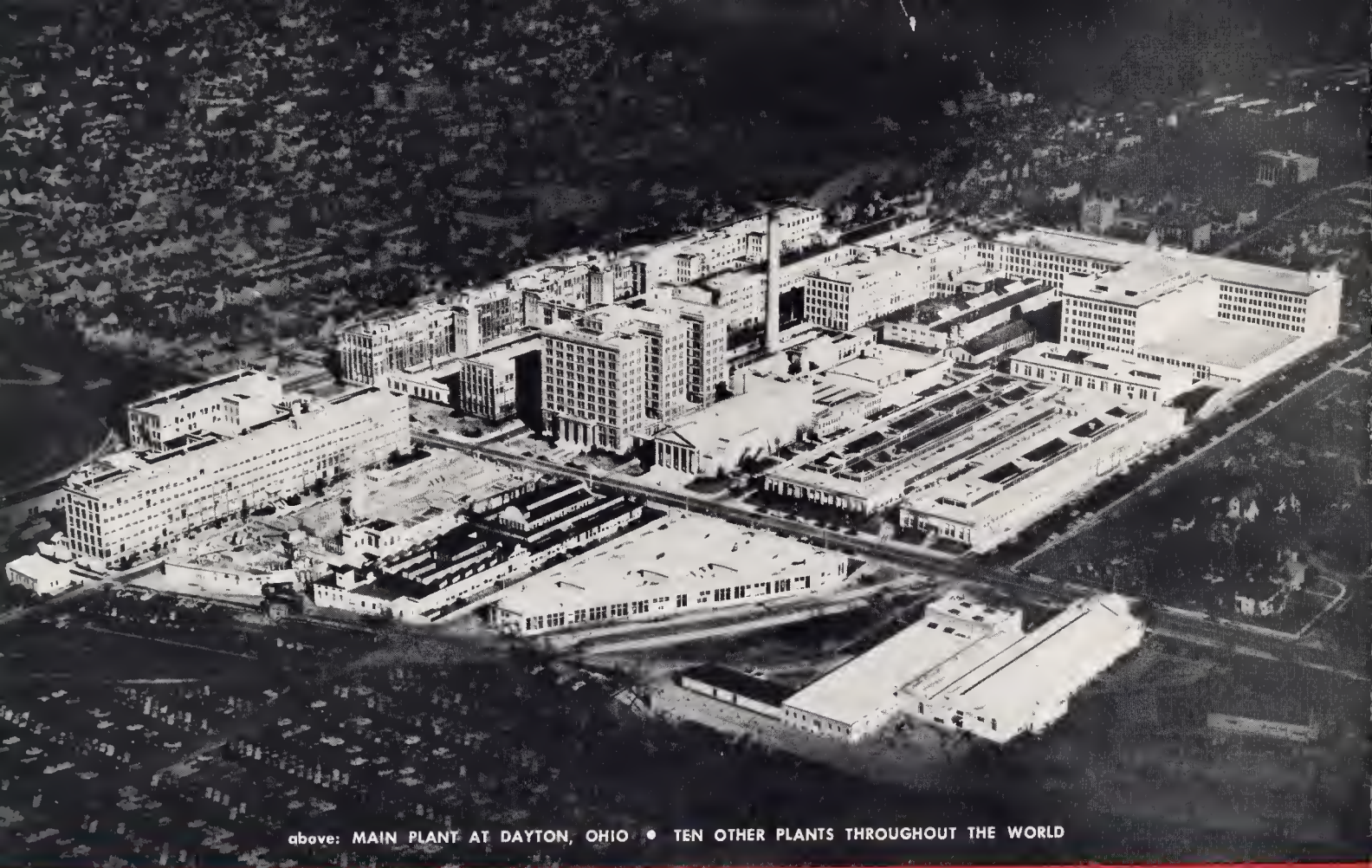
INSTALL-

National Engineers and Sales Representatives will assist in planning your installation site... work with you during the conversion period... be available at all times for consultation.



MAINTAIN-

National's trained specialists and facilities will be constantly available to assure all units are maintained at peak efficiency.



above: MAIN PLANT AT DAYTON, OHIO • TEN OTHER PLANTS THROUGHOUT THE WORLD

Before you Invest, Investigate *National* *

National's Electronic Data Processing System is designed to bring new accounting efficiency to the business world. Efficiency that spotlights conditions requiring immediate action. Efficiency that enables key personnel to devote more time to effective management—less time to supervision of routine functions.

Efficiency that reduces the indirect expense of clerical workers. Efficiency that processes raw data into immediate decision reports.

This new business efficiency can be yours if you plan today—WITH NATIONAL—for your Electronic Accounting System.

*Trade Mark—Reg. U. S. Pat. Off.



National's Electronic Research and Engineering Division, Hawthorne, California

For additional information, contact the local National Cash Register office or the Electronic Sales Division, Dayton, Ohio.

The National Cash Register Company • Dayton 9, Ohio